



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/598,997

09/18/2006

Yuichiro Nakamura

OGOSH61USA

3036

270 7590 05/13/2009

HOWSON & HOWSON LLP  
501 OFFICE CENTER DRIVE  
SUITE 210  
FORT WASHINGTON, PA 19034

EXAMINER

SHEVIN, MARK L

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

05/13/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/598,997	<b>Applicant(s)</b> NAKAMURA ET AL.	
	<b>Examiner</b> MARK L. SHEVIN	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 7-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 7-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Status of Claims*

1. Claims 1-2 and 7-20, filed February 17<sup>th</sup>, 2009, are currently under examination. Compared to the claims filed September 18<sup>th</sup>, 2006 and examined in the previous Office Action mailed November 18<sup>th</sup>, 2008, claims 15-20 are new.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### *Claim Rejections - 35 USC § 103*

2. **Claims 1-2 and 7-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP '623** (JP 2002-069623 – Machine translation) in view of **JP '860** (JP 2001-026860 – Machine translation).

#### JP 2002-069623:

JP '623, drawn to a Co-Cr-Pt-B sputtering target with a fine and uniform structure and a method for manufacturing it, discloses a Co-Cr-Pt-B system target with a composition of 10-30 at% Cr, 5-30 at% Pt, 1-15 at% B, and the balance Co (claims 5-6, para 0010).

The target has a microstructure with cells of less than 200 microns that are divided by a network of formed borides (claim 1, para 0007 and 0016) and an average crystal grain diameter of the matrix (Co-rich matrix) of less than 40  $\mu\text{m}$  (claim 2, para 0008 and 0016).

Art Unit: 1793

The microstructure of the target is designed to control the coercive force of a magnetic film, dispersion of the magnetic properties on a square-shaped ratio, and the stable manufacture of a thin film from the target.

The targets were cast and then hot-rolled with a reduction of 0, 25, or 50% as shown in Tables 1, 4, and 5.

JP 2002-069623 does not teach the temperature of hot rolling or subsequent annealing.

JP 2001-026860:

JP '860, like JP '623, is drawn to the formation of a cobalt base sputtering target with a fine crystal grain size (Abstract). JP '860 discloses that the sputtering target material composition is substantially the same as JP '623 in 10-30 at% Cr, 5-30 at% Pt, 1-10 at% B, and the balance Co – all of which overlap the composition ranges of JP '623.

The target of the aforementioned composition is hot rolled so that the average crystal size of the matrix is controlled to be less than 50  $\mu\text{m}$  (Abstract and claims 1 and 6). The hot rolling is carried out at a temperature of 800 - 1100 °C (claim 11) after annealing at a temperature of 800 - 1100 °C (claim 12).

The rolling reduction was less than 10% per pass and cross rolling was used (para 0018).

Regarding claims 1, 15, and 16 it would have been obvious to one of ordinary skill in sputtering target manufacturing, at the time the invention was made, to combine JP '623 with JP '860 to form a Co-Cr-Pt-B alloy with an island-shaped rolled structure

Art Unit: 1793

per claim 1 as JP '623 taught a Co-Cr-Pt-B sputtering target with cells of less than 200 microns that are divided by a network of formed borides (claim 1, para 0007 and 0016) and an average crystal grain diameter of the matrix (Co-rich matrix) of less than 40  $\mu\text{m}$  (claim 2, para 0008 and 0016). The targets were formed by casting and then hot rolling with a reduction of 0, 25, or 50% (Tables 1, 4, and 5). JP '860 further elaborates on this production method of casting and hot-rolling a Co-Cr-Pt-B sputtering target (overlapping composition between the two disclosures as well) by teaching that target with an average grain size below 50  $\mu\text{m}$  (Abstract and claims 1 and 6) is formed by casting and then hot rolling at a temperature of 800 - 1100  $^{\circ}\text{C}$  (claim 11) after annealing at a temperature of 800 - 1100  $^{\circ}\text{C}$  (claim 12).

MPEP 2112.01 (I), para 1 states:

Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best, 562 F.2d at 1255, 195 USPQ at 433. See also Titanium Metals Corp. v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985)

From the instant specification, the instant Co-Cr-Pt-B target is first cast (p. 4, lines 3-10 and p. 5, lines 23-27) and repeatedly hot rolled and heat treated at 1100  $^{\circ}\text{C}$  (p. 4, lines 19-22 and p. 6, Table 1) to a final reduction ratio of 15 – 40% (p. 4, lines 22-30 and p. 6, Table 1). The aforementioned combination of JP '623 and JP '860 is

Art Unit: 1793

produced by a substantially similar method of casting, hot rolling with not more than 10% per pass, annealing at 800-1100 °C, and rolling down to a final reduction of 25%. One of ordinary skill would thus have a reasonable expectation of success in forming a Co-Cr-Pt-B sputtering target with the claimed microstructure as the cited prior art processes a substantially similar Co-Cr-Pt-B alloy stock in a substantially similar method.

Regarding claim 2, JP '623 taught that the target has a microstructure with cells of less than 200 microns that are divided by a network of formed borides (claim 1, para 0007 and 0016). MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists."

Regarding claims 7 and 10, JP '623 taught that the average crystal grain diameter of the matrix (Co-rich matrix) was less than 40 µm (claim 2, para 0008 and 0016) and JP '860 taught that the average crystal size of the matrix is controlled to be less than 50 µm (Abstract and claims 1 and 6). MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists."

Regarding claims 8, 9, and 11-14 both JP '623 and JP '860 taught that the sputtering targets were cast and hot rolled and JP '623 taught specific examples of Co-Cr-Pt-B targets that were hot rolled to a reduction ratio of 25%, as shown in Tables 1, 4, and 5.

Art Unit: 1793

Regarding claims 17-19, one of ordinary skill in sputtering target manufacturing, at the time the invention was made, would have reasonably expected the sputtering targets of JP '623 in view of JP '860 to possess the instantly claimed in-plane variation of coercive force and coercive force as the sputtering targets of the prior art references are substantially similar products produced by a substantially similar process (per the reasons stated above in the instant Office Action) that would lead to the claimed microstructure and composition, and thus the claimed electromagnetic properties.

Regarding claim 20, it would have been obvious to one of ordinary skill in sputtering target manufacturing, at the time the invention was made, to choose the claimed Co-Cr-Pt-B composition from the disclosures of JP '623 and JP '860 as both taught broader Co-Cr-Pt-B alloys with overlapping ranges of Co, Cr, Pt, and B and one would be motivated to select the instant ranges through optimization per MPEP 2144.05.

***Response to Applicant's Arguments:***

3. Applicant's arguments filed February 17<sup>th</sup>, 2009 have been fully considered but they are not persuasive.

Applicants assert (p. 5, para 2-3) that one of ordinary skill in the art would have no common sense reason for combining the method steps for JP '623 and JP '860 in the manner asserted by the previous Office Action.

In response, JP '623 teaches a Co-Cr-Pt-B sputtering target and process of manufacturing and one of ordinary skill would be expected to look to JP '860 for more

Art Unit: 1793

information regarding processing such Co-Cr-Pt-B alloys given the additional processing parameters taught in JP '860 regarding hot rolling and subsequent annealing.

Applicants assert (p. 6, para 1 to p. 7, para 3) that the microstructure of JP '623 and the instant application have structural differences claimed by the present application.

In response, Applicants have not presented technical evidence showing that a Co-Cr-Pt-B alloy processed by a substantially similar process would not be expected to produce a substantially similar final microstructure. Furthermore the instant claims feature open-ended claim language of “comprising” and do not positively exclude boride networks or address borides.

Applicants assert (p. 7, para 4 to p. 9, para 1) that the microstructure of JP '860 and the instant application have structural differences claimed by the present application.

In response, Applicants point to borides as significant differences but have not shown how the instant claims define a patentable distinction over the product-processing route of the prior art which would be expected to yield a substantially similar product.

Applicants assert (p. 9, para 4) that claim 15's limitation of “island-shaped rolled structures extending in a direction of rolling...” is in direct conflict with the use of cross-rolling required by the prior art.



Art Unit: 1793

In response, cross-rolling is not dispositive of a total absence of extension in a rolling direction as the Co-Cr-Pt-B sputtering target implicitly has at least some degree of extension in the direction of the final hot rolling operation.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**-- Claims 1-2 and 7-20 are finally rejected**

**-- No claims are allowed**

The rejections above rely on the references for all the teachings expressed in the texts of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Art Unit: 1793

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy M. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

***/Mark L. Shevin/***  
Examiner, Art Unit 1793

May 8th, 2009  
10-598,997

***/George Wyszomierski/***  
Primary Examiner  
Art Unit 1793